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Albris, Kristoffer

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Disaster Governance and the Rise of Social Media: Ethnographic Perspectives from Germany

Kristoffer Albris

*Department of Anthropology, University of Copenhagen
Changing Disasters Research Programme*

In recent years we have witnessed a growing use of digital technologies and social media platforms in emergency response and disaster preparedness work, including emergent citizen-driven response efforts. While emergent volunteer-based disaster response is not a new phenomenon, the rise of social media provides new possibilities for citizen-driven initiatives to become consolidated as response networks. This, however, has implications for how disasters are governed as emergent online networks can challenge the authority of government entities by becoming the central way for citizen volunteers to participate in emergency work. This chapter explores the use of social media platforms by citizens during the 2013 floods in Dresden, Germany. As the rising Elbe River became a real threat to the city, citizens self-organized by using Facebook groups, Twitter tags, and Google Maps. Government responses have been ambivalent, on the one hand praising the solidarity of citizens and the online networks role, on the other, criticizing what it sees as a culture of volunteer dilettantism, exacerbated by the online networks presence. The chapter describes the various perspectives of government and non-government actors by drawing on ethnographic interviews with stakeholders involved in flood issues in Dresden. It ends by discussing some general challenges that the rise of social media presents for disaster governance based on the findings from the case study.

1. Introduction

Social media platforms and other digital technologies are increasingly being put to use in disaster and emergency response in a wide variety of ways. In this chapter, I explore how social media platforms are changing how citizen-volunteers organize response activities in crises and emergencies and discuss various challenges that this presents for disaster governance. I do so specifically through a case study analysis of how Facebook groups were used by citizens during the 2013 June floods in Dresden. My aim is to discuss what happens when new forms of media not only enable faster and more flexible forms of communication, but

also challenge the traditional government command-and-control response to disasters by providing citizens new means to coordinate collective emergency response efforts. I will argue, that the flexible and dynamic character of social media platforms, notably Facebook groups which are the main object of analysis here, provide a viable alternative to government entities for many citizens that are eager to participate in emergency response efforts, but who are often left out of official emergency plans and policies.

The Dresden case serves as an illustrative example for discussing the impact of social media on disaster governance more broadly. During the 2013 floods, Facebook groups became the central way for many citizens of Dresden to acquire information about the ongoing flood event and to coordinate city level and community level activities in a manner in which the voluntary based flood response resembled that of the government response efforts. For instance, the online networks would connect offers to help with requests for help, operating as a switchboard function. In a more general sense, the digital platforms provided a sense of common cause and purpose for volunteers, centred around a commitment to work both in cooperation with, but also in opposition to, the local authorities such as the fire department, the emergency management agency, and the police. In this way, social media networks on Facebook might provide a new way to bridge some gaps between government entities and emergent citizen-driven groups. Yet, this is not a given, as the case study from Dresden also shows.

Throughout the chapter, I draw on ethnographic data material from eleven months of fieldwork in Dresden, carried out between 2014 and 2016. I draw on interviews conducted with flood victims, citizen volunteers, social media administrators, community leaders, government officials, and NGO representatives. The analysis of the interviews aims at uncovering how the different actors reflected upon the emergency retrospectively. As a result, the analysis of the case study presents the perspectives of these various actors with an ethnographic attentiveness to how they experienced the emergency a year or more after the flood event. Moreover, the chapter draws on systematic research of several Facebook groups that emerged during the 2013 floods, that complements the actor-oriented approach of the interviews. Finally, I draw on a body of news articles and government reports that address the issue of social media use during the floods.

The chapter is structured as follows. First, I present a brief overview of the research literature on social media and disasters. I then touch upon few general issues associated with disaster governance, emergent self-organized disaster response, and social media. Next, I provide an initial overview of the flood emergency as it played out in June 2013 in Dresden, before looking specifically at how Facebook groups became a central focal point for citizens to participate in

flood response activities. I then explore how the different government in Dresden, notably the fire department, have responded to these new online participatory developments. Finally, based on the case study, I discuss a few of the potential implications for disaster governance more broadly as new digital communication technologies are changing how emergencies unfold.

Recently, a few studies have been published on the 2013 floods in Germany that deal with similar and related questions as this chapter. One study has focused on the use of social media, comparing Facebook and Twitter use as emergency communication channels between different affected areas in Germany (Kaufhold and Reuter 2016), while one study (Kuhlicke et al. 2015) has discussed the politics of volunteer participation specifically in the Dresden case. My concern in this chapter overlaps with these studies while combining a focus on social media use and emergent response, with a discussion of the implications for disaster governance.

It should be made clear, that my aim in this chapter is analytical, and I do not intend to give policy recommendations. The ambition is rather to address current and emerging issues facing us in how we deal with disasters and emergencies in the digital age than to suggest concrete changes to policies in Dresden or elsewhere.

2. Social media and disasters

As is well known, the digital revolution has dramatically changed life around the world in the span of just a few decades. Social media platforms and digital technologies are now also being used in a variety of ways for emergency and crisis management (Alexander 2014). Most of the research on social media in disasters and emergencies has focused on how these new forms of media are changing crisis communication as they allow for entirely new ways of sharing, circulating and disseminating information (Crowe 2012; Meier 2015; Veil et al. 2011;). With social media, members of the public can be kept informed about the progression of a disaster by authorities, and citizens themselves can share pictures, videos and news stories in a much faster and more dynamic manner through Twitter, Facebook, Instagram, YouTube, and so forth (Murthy and Longwell 2013; Ngak 2012). Yet this has also resulted in a quantitative explosion in the amount of information being shared.

In a recent review on the subject, David Alexander (2014) cautions that the intensification and amplification of information flows between actors make it increasingly difficult to assess the correctness, validity, and accuracy of that information. During Hurricane Sandy, for instance, false information about the

situation on the ground was widespread. Photoshop manipulated pictures circulated the web and incorrect information about which areas had been flooded became “true” news stories in the mainstream media (Alexander 2014:725). However, the tendency for incorrect, imprecise or even false information, has also been the case for traditional mass media, and perhaps found its extreme and most famous case during the critical days of Hurricane Katrina in New Orleans (Rodríguez et al. 2006:84).

Digital services and social media platforms, however, are used in a number of ways apart from facilitating a new way of sharing news and situational information. ‘Google Person Finder’ has helped people locate missing family members, as was the case in Haiti in 2010 and in Japan in 2011 (Tabuchi 2011). Facebook’s similar ‘Safety Check’ is now also used during terrorist attacks, of which Facebook has received some criticism lately (Alter 2015). Disaster relief operations have also benefitted substantially from cash donations collected through social media or text messaging services (Lobb et al. 2012). Furthermore, crowd-sourced and interactive maps by volunteers and so-called micro-mapping teams have also proven effective for emergency response and long-term disaster risk reduction planning (Petersen 2014).

There has indeed been a proliferation in the variety of ways that social media platforms and digital technologies are put to use in the context of disasters and emergencies. This, in turn, has effects on how disaster response and preparedness become objects of governance, as the following section deals with in brief.

3. Disaster governance and social emergence

Any concern with the politics and governance of disasters needs to address how such extreme events reproduce, reinforce, and reconfigure relations between the state, civil society entities, and other actors that are mobilized or play a role during emergencies. Indeed, as disaster sociologist Kathleen Tierney writes, the concept of disaster governance, as opposed to management or government, has arisen out of the recognition that functions that have historically been handled by public institutions are “now frequently dispersed among diverse sets of actors that include not only governmental institutions but also private sector and civil society entities” (Tierney 2012:342).

Disasters are by definition events or processes that are ripe with uncertainty, dispersed activity, and often disorder. It is, therefore, no coincidence that the dominant model that governments have sought to handle disaster emergencies according to, is the so-called command and control model, what Dynes also labels

the “military” model (Dynes 1994:142). The logic behind this model implies that in an emergency, certain actors such as the military, emergency management agencies, fire departments, the police, etc., are granted special authorities. As an ideal type, the command and control approach entails a highly rigid and formalized structure of management and governance, with a clear hierarchical chain of command. Ideally, only those actors with special authority are allowed and able to act. This leaves little room for any type of actor that does not fit into its scheme. Citizens, from this point of view, are essentially blocking or hindering state actors from executing emergency response plans if they try to interfere. Citizens are as a result often relegated to the status of victims or bystanders. The population within a zone of a disaster thus becomes not only an object of protection but an object of governance from the state’s perspective.

It is not surprising then, as Scanlon et al. (2014:44) note, that emergency management agencies, and governments in Western societies have been quite reluctant and unsuccessful in incorporating citizens or “ordinary people” into the official response structures. Nor is it necessarily the case, that citizens want to be incorporated into emergency plans. Yet, one could argue that there is an underlying consensus that, at least ideally, more integration of civil actors and public participation in emergency plans could benefit the overall aim of reducing disaster risks (Tierney 2012:358).

The phenomenon of large numbers of helpers and volunteers converging on a disaster scene, also known as emergent self-organized response, has been discussed by disaster scholars since the middle of the twentieth-century (Fritz and Williams 1957). The term emergence highlights how organizations change either roles, tasks or structures during emergencies (Drabek and McEntire 2003), and how activities by actors in emergencies are organized suddenly, which often includes acts of prosocial behaviour (Rodriguez et al. 2006) and creative improvised problem solving (Kendra and Wachtendorf 2002).

This is a well-known phenomenon in disaster studies. However, in today’s digital world, emergent disaster response is beginning to take on new forms. The comparatively fast, dynamic, and flat-hierarchical character of social media platforms enables especially administrators and initiators of online networks to play highly important roles in the orchestration of civil emergency response. Because of the lack of clear hierarchical structures on social media, David Alexander argues, these platforms are more suited to collaborative governance rather than command-and-control approaches to emergencies: “issuing orders to the general public is likely to generate an adverse reaction on social media, whereas issuing requests for collaboration may elicit a more positive response, based on involvement rather than alienation” (Alexander 2014:721).

As Tierney points out, disaster governance is shaped in part by how relations between the state and civil society are configured, and especially the strength of civil society institutions (Tierney 2012:350). Following this line of thought, I argue that we should see emergent social media networks and groups involved in disaster and emergency response as a new type of actor that does sit neatly with traditional distinctions between the state and civil society. When social media platforms such as Facebook groups enable a common coordinated response effort by citizens, the authority of professional agencies to govern who does what, when and why, during an emergency becomes challenged, primarily because such online networks provide an infrastructure of communication that in some ways simulate more official structures of command, but in a collaborative and inclusive spirit of the bottom-up, grassroots institutional type.

In the following section, I begin to approach these issues empirically by exploring how citizens mobilized and organized using social media and digital technologies in Dresden during the major flood event in June 2013.

4. The 2013 Dresden floods

In the middle of May 2013, several consecutive high-pressure systems over Central Europe created the highest amounts of precipitation since 1858 (City of Dresden 2014)). Massive amounts of water flowed through and filled up the major river catchments of the region. When the Elbe reached the seven-meter mark at the measuring station in the city centre reaching the fourth and final alarm level in the first days of June, both government entities and civil society initiatives started to act to prevent the hazard from turning into a disaster.

Over the following days and weeks, fire department teams, the technical emergency agency (THW), police and the national guard, were brought in to help fight the rising water masses. Evacuation procedures were commenced, mobile flood wall defences were put in place, and areas at risk of flooding were closed off to the public. A total of 13.300 persons were evacuated within the Dresden municipal border. 8.500 houses were without power. Public schools closed down. Several bridges were closed for crossing and highways and city streets were cut-off. Some areas turned into isolated islands, and boat transportation corridors organized by the authorities were the only way to access these areas. Hundreds of houses were flooded. Across Germany, damages were estimated at 8.2 billion Euros. In the Free State of Saxony, this number was 1.9 billion, and in Dresden alone incurred damages of 171 million Euros (Landeshauptstadt Dresden 2014).

Dresden, the capital of Saxony with a population of approximately 500.000 people is no stranger to floods. Being a riverine city founded on the banks of the

Elbe, inundation has historically been a fact of life (Fügner 1995). But it has not always been so. Eleven years before in 2002, Dresden experienced the most destructive floods on record, resulting in widespread damages to buildings and infrastructure. At that time, no major flood event had occurred since 1940. In the 62-year interim period, understanding what a flood event entailed had slowly faded from people's memory – a phenomenon that historian Christian Pfister (2011:17) calls a disaster memory gap. The 2002 floods took most people in Dresden by surprise, and the city was far from prepared for a flood event of that magnitude. Damages in the city wrought by the floods amounted to 1.36 billion Euros, significantly more than in 2013.

In 2013, the situation was very different, although the meteorological and hydrological conditions were similar. In the period between the two events, the city had invested roughly 26 million Euros in structural flood defences, partly funded by EU funds. Furthermore, the creation of retention areas upstream in the Czech Republic where the Elbe has its source meant that fewer areas were inundated up-stream in Saxony than in 2002. Damages to both private and public property were significantly less severe, and the response activities were better coordinated and swiftly executed. Indeed, emergency efforts were extensive. In a combined effort of volunteers, NGOs and professional agencies, 1.6 million sandbags were filled and placed along the Elbe. In an independent official evaluation of the event – what is known as the “Kirchbach Report” – the response efforts were in general deemed successful, and the report praised risk reduction measures that the city had taken in the years since the major floods of 2002 (Freistatt Sachsen 2013).

The most significant difference between the events in 2002 and 2013, however, was the fact that the world has now entered the age of social media. Citizen-driven flood responses were indeed widespread during the 2002 floods as well. Flood affected people in Dresden still remember the many strangers who helped out. Yet the coordination and the organization of civil volunteers during and after the flood emergency developed in a different manner in 2013 as a good deal of this activity was organized through social media platforms, as the following case describes.

5. “An army of citizens”

On Sunday, June 2, 2013, when the Elbe was about to overrun the dike systems in Dresden, a young salesman named Daniel Neumann started a Facebook group called 'Fluthilfe Dresden' (Flood Help Dresden). His idea was to create a digital platform where citizens could share information about the emergency as it

developed. As he launched it, Daniel had no idea whether or not anyone would even notice it. On Monday morning the site only had 45 followers, but that number quickly rose to 12,000 by the end of the day. By Wednesday evening, it peaked at over 50,000 followers. As Daniel described it to me in an interview, “an army of citizens suddenly formed out of nowhere”. The network would eventually play a central role in coordinating volunteer actions in the fight against the floods.

Fluthilfe Dresden was not the only emergent online network that connected people. Two other sites on Facebook – ‘Hochwasser Dresden’ (High Water Dresden) and ‘Elbpegelstand’ (Elbe Level) - quickly became just as popular. In addition, several smaller sites and groups started popping up. Some aimed at sharing information, others focused more on the cleaning up phase after the floods, while the purpose of some was to debate the perceived insufficiency of government responses to the emergency. Across Germany, indeed across all of Central Europe, such Facebook sites and groups emerged in the span of just a few days along with other digital platforms including Twitter and Google Maps, to aid emergency response in inundated areas. Although I focus on the Dresden case here, it should be made clear that emergent social media platforms for flood response and relief were widespread across the region (Kaufhold and Reuter 2016).

As his Facebook site gained momentum, Daniel, and his friends who helped him as the workload became increasingly hard to handle, began to receive messages from eyewitnesses along the river and posted updates about which areas needed help. He would then direct followers towards these areas, and they would also inform people about what kind of help or materials were needed (e.g. sand, sandbags, transportation, food, etc.). People could then help in the response effort by transporting sand, filling sandbags or provide logistical help in any way they could. Local companies and shops also provided resources such as food and drinks for the helpers and posted their offers through the Facebook groups. In other words, the Facebook groups and sites became switchboards for receiving and directing information between those that needed help and those that wanted to help, while also being the main centre for individual citizens, businesses, and even the authorities, to show support for the flood response efforts in a public forum.

Daniel also posted updates from the authorities such as the fire department, as he did not feel that his site should be seen as an opposition to the professional agencies’ work, but rather as a supplement to it. Yet, as the emergency unfolded, the Facebook groups also became a forum for people voicing their worries and frustrations with what they perceived as an insufficient level of response from the government’s side.

Perhaps the most frequent heard criticism of the local government’s flood response efforts was that it was too slow in being executed and that it was

concentrated in certain key areas in the city that had already been defined in official emergency plans to be of special concern. Many of the volunteers I have interviewed acknowledges that the city needs to work within certain limits, for instance, that it cannot act unless there has been given an official warning about a threat of a disaster. However, for many citizens in Dresden, especially younger people who were generally among the most active during the flood response, it seemed there was too much bureaucracy from the government's side. Conversely, the social media platforms showed that some of the roles that government agencies normally fill could also be served by citizens without the bureaucratic barriers that prevented things "to just get done", as one student remarked in an interview.

Importantly, the online networks collaborated with groups that were organized on the ground along the river. An example of such a group was a student club called 'Bärenzwinger' that also played a central role in spreading the word of the Facebook groups. Johannes Graubner is one of the central figures of the club, whose facilities are located just beside the Dresden Fortress in the city centre, in a small area prone to flooding. As the Elbe's water level climbed the alarm levels, they started sharing individual posts on Facebook in the student club networks, encouraging people to help. At that time, and in the coming days, there were no resources delivered from the public institutions. Instead, they bought their own sandbags and were donated shipments of sand, which they got from friends and people in their networks, and they began filling bags to construct a temporary dike.

People kept coming to their filling station because of its central location although many other areas in Dresden were in much more need of assistance. But the club quickly set up a couple of pavilions, a computer station, and used street signs to hang informative posters of where people could go if they wanted to help. Importantly, they instructed people to consult Fluthilfe Dresden for more information. Johannes points out that there was a problem with false and inaccurate reports in some cases coming from the Facebook sites, but they tried to share information with Fluthilfe Dresden as much as they could to verify the massive amounts of information that was being sent in both directions. For Johannes, it was important to have this coordination from the ground and not just on Facebook. Indeed, Daniel and his team of friends also tried to include scouts that would ride along the Elbe on bikes, that could verify the information they were receiving from people writing to them.

Intermediate clusters of coordination teams such as the one just described were set up in many places of the city, where volunteers were converging, and often one person or a small group became unofficial leaders. When Daniel himself came out to some of the places where people were busy filling sandbags, he was

treated with respect: “I explained that I was from the Facebook site Fluthilfe Dresden, and then when I started talking, everyone was quiet. I have never experienced that before.”

6. Navigating the flood emergency

In order to better understand what kind of role the Facebook groups served, I now turn to a short description of how individual volunteers navigated their way in the flood emergency. The following case provides an illustration of this.

Hans is a young medical student, who was born and raised in Dresden. He remembers how on the first day he had helped in the part of Dresden known as Neustadt (New Town). He had met with a friend there, but initially there was not much to do, as there were no sandbags to fill or distribute. The fire department was late to arrive, and volunteers started collecting whatever sandbags and sand they could find. When trucks eventually started coming with sand, people were effective at building dikes along the riverbanks. They formed in long chains, transporting the sandbags from person to person, forming, in a very concrete sense, what Simone (2004) has termed people as infrastructure.

The next day Hans and his comrades consulted the Fluthilfe Dresden site to locate where people seemed to be needing help. They went to Laubegast, a place on the opposite side of the Elbe, east of Dresden Old Town. There, the situation was quite different, and Hans felt that people were anxious about their homes and possessions being flooded. To begin with, there was no sand there, and people had to improvise the flood response effort. People worked hard, and Hans remembers vividly how he was tired to the brink of exhaustion when he left the area that night.

On the third day, he went to the Dresden New Town once again and offered his help there. Here the mood was again quite different, and a party atmosphere was beginning to form, as the news reports also later recalled. There was perhaps 500 people there, and civilians coordinated everything. A party atmosphere began to emerge, as one news article remarked (Kailitz 2013). Indeed, in some cases, the number of volunteers outweighed the need for help. Some people in Dresden have reported to me how they had turned up to the sights of the Elbe that were about to be flooded, offering their help, but were asked to leave by the fire department. Others remember how they felt bad about accepting some of the food and drinks being offered to volunteers at the sandbag filling stations because they felt they had hardly done anything to deserve it.

But the massive mobilization of volunteers did result in positive outcomes. Several different volunteers have reported to me in interviews, that in some parts

of the city, they had organized response efforts long before authorities had arrived. In some cases, this had a real effect on preventing the water masses to inflict damage on buildings and infrastructure. An official from the fire department has also reported to me that the sheer number of citizens in some cases enabled a more effective response effort than the professional firefighters could provide, for instance in the case of filling sandbags. For instance, a division leader of the Dresden fire department estimated how at one filling station, the machines the Fire Department used could fill approximately 1500 sandbags an hour whereas the volunteers could fill approximately 5000 an hour using shovels and their bare hands.

7. Government responses to citizen-volunteers and online networks

Nevertheless, in other cases, the citizen-driven actions on the ground the various agencies that have a role in flood emergency response have raised concerns about public volunteers interfering in the work of professionals. In an evaluation report of the 2013 floods by the Office of Environment, Agriculture, and Geology of the Free state of Saxony (2014), special attention is given to the social networks that formed. The emergence of volunteers through social networks is initially described as an impressive phenomenon as it reached and activated a large number of people within hours (ibid.:112). Yet, while in some places civil volunteer aid was highly useful, the report quickly points out that there are great dangers associated with the organization of voluntary helpers through Facebook. The main problem is that too many volunteers can get in the way of the plans of emergency management professionals, and can result in misguided efforts to help. As the report states, the large number of people that showed up to help is evidence of a need for the public to engage in mitigating threats to the city as a whole. However, this resulted in degrees of help which were out of proportion relative to the actual threat, i.e. there were too many sandbags. In other places, sandbags dikes were built in the wrong way and had to be removed or rebuilt, which resulted in unnecessary and redundant work for the fire department and the emergency management agency (THW).

Local authorities and responsible government agencies are concerned that the future management and orchestration of flood response no longer lie solely in their hands. Although the fire department is sympathetic to the citizens' willingness to aid their fellow citizens and their city, such good intentions pose problems for the proper execution of flood response tasks. From the authorities' perspective, the emergency becomes not merely a question of managing the external hazard (the flood), but also the multitude of actors that converge on the

area of risk. As a result, a public debate has arisen in Dresden in the wake of the floods concerning the question of what the proper role of the public should be in flood emergencies (Grigutsch 2013).

According to a fire department section leader, Dresden has always experienced people who helped during floods, which the fire department and the other official bodies have accepted to some degree. But the rise of social media has created some confusion in the way they normally characterize the various types of actors that are involved in emergencies. Normally, the section leader explained, there will be the professional units, teams, and agencies, that are supposed to lead the execution of response tasks, such as removing flood waters from areas that are not classified as flood zones, and filling sandbags for building provisional dikes. Then there will be the volunteer actors, such as the volunteer fire squads, that can assist and help the professionals. And finally, civilian volunteers can in some cases provide extra hands. But, as the section leader quite forcefully told me, the social media phenomenon has disturbed that division of labour. Now someone who has not experience or knowledge of how to do even the most basic emergency tasks suddenly arrive on the scene and can direct people where to go and what to do by the click on a screen. People that could once be categorized as citizen volunteers, are now well organized and connected online.

The citizen-driven networks on Facebook came as a surprise to the different government entities. “They were not ready for it”, as the Fire Department section leader explained to me. They were seeing the messages from groups such as Fluthilfe Dresden, and could see that a lot of them communicated wrong information. He also believes that the Facebook sites were not being cooperative and were reluctant to integrate their knowledge with the Fire Department and the other government entities. As indicated

Yet, while remaining critical, the local government has also seen it necessary to praise the ‘solidarity of the people’, including the work of the social media networks during the flood emergency. This presents a peculiar situation, where government entities have to be positive towards the social media networks role in flood response because there is substantial public support for them, while also having to exert their own authority as ultimately being those that are responsible for the proper execution of flood response and preparedness policies and plans. The social media networks then became easy targets to blame, or as Kuhlicke et al. have argued along similar lines, responsible government administrators can use these networks to “delegate responsibility and blame to those stakeholders participating in risk management in case “something goes wrong”” (Kuhlicke et al. 2015:318).

As has already been mentioned, critique has been levelled in the opposite direction as well. Several of the people involved in either Facebook groups, or

crowd-sourced Google Maps that were also used widely by the public, have expressed interest in collaborating with the local government during future flood emergencies. Yet, these same people have also criticized the government's lack of concern with new online platforms for volunteer participation (Grigutsch 2013). However, with a growing public interest in the issue, with conferences, public events, and news articles addressing the question of social media during floods in the future, and reports given to me in interviews by volunteers, also show signs of optimism that there might be more integration in the future. New citizen-driven initiatives such as Fluthilfezentrum (Flood Help Centre), is trying to build a standing network of volunteers that are delegated tasks before-hand. The organizers of this initiative hope that they could get an official mandate from the city government to organize citizen-volunteers in the future. The Dresden government on its part, recently stated that it was looking into ways to build upon the experiences from the 2013 floods by making a strategy for using Facebook and Twitter in future emergencies (Brüggemann 2016). It is unclear, however, what this strategy will entail for the time being.

8. Conclusion

The various response efforts of government agencies and citizen-driven initiatives including the social media platforms have been subject to a public debate in Dresden in the years following the floods. What is clear from the issues I have only been able to touch upon in the above given the limits of this chapter, is that the new media reality we are living in is also ushering in a new epoch of disaster governance, in which online networks have emerged as a new type of actor that can have profound effects on how large-scale emergencies unfold.

How social media platforms and other digital technologies are used during emergencies and by whom, will depend on the availability and use of them in a particular context, the tasks that they will be able to facilitate, and the type of hazard that people are facing, as well as the particular geographical, social and cultural circumstances of the area. Nonetheless, it seems likely that we will see more examples of social media and digital technologies be put to use in new and novel ways in emergencies, not only by citizen-driven initiatives, but by governments and NGOs as well.

The implications of social media for disaster governance, as illustrated by the Dresden case, is that the emergent responses by civil actors that have always posed a challenge to government authority in emergencies is now being amplified by emergent social media networks that give volunteer initiatives momentum and a strengthened presence. In other words, they provide citizens with new ways of

exerting collective agency in situations where such agency is normally highly limited.

The Dresden case study illustrates how social media platforms are not only changing how information is circulated in emergencies and crisis. They also impact on the execution of concrete tasks in disaster response, by offering volunteers and civil society entities new tools for carrying out concrete response tasks. They enable actors to cooperate and contribute to emergency response activities more rapidly and across traditional structures of emergency response, consolidating the linkages between volunteers and allows for a visible public presence. The effect is, as I have argued, is that civil emergent response efforts that are organized through online platforms present a challenge for disaster governance because such online networks provide a perceived alternative to the government's own platforms and the work of official professional agencies. On the other hand, the potential of social media platforms might also be that they can provide a linkage between emergent citizen groups and professional response mechanism, that have historically been hard to integrate if such online networks and platforms were themselves incorporated into disaster and emergency governance structures and plans.

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